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## NOTICE OF ALLOWANCE AND FEE(S) DUE

23669 7590 07/14/2010

HUFFMAN LAW GROUP, P.C.  
1900 MESA AVE.  
COLORADO SPRINGS, CO 80906

EXAMINER

ABAD, FARLEY J

ART UNIT

PAPER NUMBER

2181

DATE MAILED: 07/14/2010

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/802,532	03/16/2004	Christopher J. Petley	NEXTIO.0200	3523
TITLE OF INVENTION: SHARED INPUT/OUTPUT LOAD-STORE ARCHITECTURE				

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	YES	\$755	\$300	\$0	\$1055	10/14/2010

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. **PROSECUTION ON THE MERITS IS CLOSED.** THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN **THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE** OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. **THIS STATUTORY PERIOD CANNOT BE EXTENDED.** SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

## HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

**IMPORTANT REMINDER:** Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

# **PART B - FEE(S) TRANSMITTAL**

**Complete and send this form, together with applicable fee(s), to:** Mail **Mail Stop ISSUE FEE**  
**Commissioner for Patents**  
**P.O. Box 1450**  
**Alexandria, Virginia 22313-1450**  
**or Fax** **(571)-273-2885**

**INSTRUCTIONS:** This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

23669 7590 07/14/2010

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**COLORADO SPRINGS, CO 80906**

## **Certificate of Mailing or Transmission**

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/802,532 03/16/2004

Christopher J. Pettey

NEXTIO.0200

3523

**TITLE OF INVENTION: SHARED INPUT/OUTPUT LOAD-STORE ARCHITECTURE**

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	YES	\$755	\$300	\$0	\$1055	10/14/2010

EXAMINER	ART UNIT	CLASS-SUBCLASS
ABAD, FARLEY J	2181	710-002000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.  
☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a **Customer Number is required.**

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1 \_\_\_\_\_  
(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 \_\_\_\_\_  
3 \_\_\_\_\_

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

**PLEASE NOTE:** Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY AND STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☐ Issue Fee  
☐ Publication Fee (No small entity discount permitted)  
☐ Advance Order - # of Copies \_\_\_\_\_

4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.  
☐ Payment by credit card. Form PTO-2038 is attached.  
☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number \_\_\_\_\_ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

**NOTE:** The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature \_\_\_\_\_ Date \_\_\_\_\_  
Typed or printed name \_\_\_\_\_ Registration No. \_\_\_\_\_

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. **DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.**

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/802,532	03/16/2004	Christopher J. Petty	NEXTIO.0200	3523
23669	7590	07/14/2010	EXAMINER	
ABAD, FARLEY J				
ART UNIT			PAPER NUMBER	

2181

DATE MAILED: 07/14/2010

## Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 1512 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 1512 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

**Notice of Allowability****Application No.**

10/802,532

**Examiner**

FARLEY J. ABAD

**Applicant(s)**

PETTEY ET AL.

**Art Unit**

2181

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to amendment filed 04/06/2010.
2. ☒ The allowed claim(s) is/are 1-3, 8-24, 26-44, 49-76, and 81-108 (renumbered as 1-95).
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some\* c) ☐ None of the:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.  
(a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached  
1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.  
(b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.  
**Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08),  
Paper No./Mail Date 04/24/2010, 06/23/2010, 06/16/2004, 08/23/3005
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_.

**EXAMINER'S AMENDMENT**

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Richard Huffman on 06/09/2010.

The application has been amended as follows:

***Amendments to the claims***

Claim 1. (Currently Amended) An apparatus for sharing input/output endpoints, the apparatus comprising:

sharing logic, coupled to a plurality of operating system domains through a load-store fabric, for routing transactions between said plurality of operating system domains and said sharing logic; and

a first shared input/output endpoint, coupled to said sharing logic, configured to request/complete said transactions for said each of said plurality of operating system domains according to a variant of a protocol, wherein said variant comprises encapsulating an OS domain header within a transaction layer packet that otherwise comports with said protocol, and wherein a particular OS domain header associates a particular transaction layer packet with a particular one of said plurality of operating system domains;

wherein said sharing logic maps said each of said plurality of operating system domains to a corresponding root complex;

wherein said corresponding root complex is associated with one or more processing complexes, each comprising:

a processing core, configured to process data, wherein said processing core accesses a memory that is configured to store said data;

wherein said data is transferred from said corresponding root complex to said sharing logic and from said sharing logic to said corresponding root complex according to said protocol, and wherein said protocol provides for routing of said transactions only for a single operating system domain.

Claims 4-7. (Cancelled)

Claim 38. (Currently Amended) A shared input/output (I/O) mechanism, comprising:

a load-store fabric, configured to enable operating system domains to share one or more I/O endpoints, said load-store fabric comprising:

sharing logic, coupled to said operating system domains and to said one or more I/O endpoints, for routing first transactions to/from said operating systems domains, and for routing second transactions to/from said one or more I/O endpoints, wherein each of said second transactions designates an associated one of said operating system domains for which an operation

specified by each of said first transactions be performed, and wherein said second transactions comport with a variant of a protocol, and wherein said variant comprises encapsulating an OS domain header within a transaction layer packet that otherwise comports with said protocol, and wherein a particular OS domain header associates a particular transaction layer packet with a particular one of said operating system domains;

wherein said sharing logic associates each of said operating system domains with each of a corresponding root complex;

wherein said corresponding root complex is associated with a processing complex that is configured to process data and to accesses a memory that is configured to store said data;

wherein said data is transferred from said root complex to said sharing logic and from said sharing logic to said root complex according to said protocol, and wherein said protocol provides exclusively for a single operating system domain within said load-store fabric.

Claims 45-48. (Cancelled)

Claim 74. (Currently Amended) A method for sharing an input/output (I/O) endpoint within a load-store fabric, comprising:  
via sharing logic within the load-store fabric, interconnecting operating system domains to the I/O endpoint;

first communicating with each of the operating system domains individually; and  
second communicating with the I/O endpoint according to a variant of a protocol that provides exclusively for a single operating system domain within the load-store fabric to enable the I/O endpoint to associate a prescribed operation with a corresponding one of the operating system domains, wherein the variant comprises encapsulating an OS domain header within a transaction layer packet that otherwise comports with the protocol, and wherein a particular OS domain header associates the transaction layer packet with the corresponding one of the operating system domains;

wherein said first communicating comprises:

within the sharing logic, mapping each of the operating system domains to a corresponding root complex;

wherein the corresponding root complex is associated with one or more processing complexes, each configured to process data, wherein the data is stored in a memory;

transferring the data to and from the corresponding root complex according to the protocol, and wherein said protocol provides exclusively for a single operating system domain within said load-store fabric.

Claims 77-80. (Cancelled)



***Information Disclosure Statement***

2. The information disclosure statement (IDS) submitted on 04/24/2010, 06/23/210, 06/16/2004, and 08/23/2005 is in compliance with the provisions of 37 CFR 1.97.

Accordingly, the information disclosure statement is being considered by the examiner.

***Terminal Disclaimer***

3. The terminal disclaimer filed on 06/10/2010 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of U.S. Patent 7,219,183 has been reviewed and is accepted. The terminal disclaimer has been recorded.

***Allowable Subject Matter***

The following is an examiner's statement of reasons for allowance: The prior art of record taken alone and/or in combination fails to teach and/or fairly suggest wherein said variant comprises encapsulating an OS domain header within a transaction layer packet that otherwise comports with said protocol, and wherein a particular OS domain header associates a particular transaction layer packet with a particular one of said plurality of operating system domains; wherein said sharing logic maps said each of said plurality of operating system domains to a corresponding root complex; wherein said corresponding root complex is associated with one or more processing complexes, each comprising: a processing core, configured to process data, wherein said processing core accesses a memory that is configured to store said data; wherein said data is transferred from said corresponding root complex to said sharing logic and from said sharing logic to said corresponding root complex according to said protocol, and

wherein said protocol provides for routing of said transactions only for a single operating system domain, in combination with other recited limitations in claim 1.

The prior art of record taken alone and/or in combination fails to teach and/or fairly suggest wherein said variant comprises encapsulating an OS domain header within a transaction layer packet that otherwise comports with said protocol, and wherein a particular OS domain header associates a particular transaction layer packet with a particular one of said operating system domains; wherein said sharing logic associates each of said operating system domains with each of a corresponding root complex; wherein said corresponding root complex is associated with a processing complex that is configured to process data and to accesses a memory that is configured to store said data; wherein said data is transferred from said root complex to said sharing logic and from said sharing logic to said root complex according to said protocol, and wherein said protocol provides exclusively for a single operating system domain within said load-store fabric, in combination with other recited limitations in claim 38 and 74.

In addition, the invention is advantageous because by breaking apart the processing complex form its I/O controllers/devices, more cost effective and flexible solutions can be introduced. In addition, by using a load-store architecture where the processing complex sends data directly to or receives data directly from an I/O device, this allows the separation to accomplished without disadvantageously affecting an existing network infrastructure or disrupting the operating system.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to FARLEY J. ABAD whose telephone number is (571) 270-3425. The examiner can normally be reached on Monday-Friday 7:30am-5:00pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alford Kindred can be reached on (571) 272-4037. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/F. J. A./

/Alford W. Kindred/

Application/Control Number: 10/802,532

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Examiner, Art Unit 2181

Supervisory Patent Examiner, Art  
Unit 2181